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ABSTRACT

One of the most important characteristics of a qualified high school teacher is college training in the subject in which he or she teaches. Data from the 1990-91 Schools and Staffing Survey (SASS)--conducted by the National Center for Education Statistics to collect information on teachers' undergraduate and graduate degrees and their school teaching assignments--were examined to determine the percentages of out-of-field teachers in core subjects and whether differences exist among schools in the extent of out-of-field teaching assignments. Results indicate that in 1990-91: (1) relatively large percentages of high school teachers taught at least one core course out of field; (2) greater percentages of teachers in private high schools taught out of field in mathematics, science, social studies, and English than did their counterparts in public high schools; (3) public and private high schools with the lowest enrollments had greater percentages of teachers teaching out of field than did the largest schools; (4) public high schools with 50 percent or more students receiving free or reduced-price lunches had higher levels of out-of-field teaching in selected subjects than did schools with less than 20 percent of these students. Results indicate that out-of-field teaching in core subjects is common in both public and private U.S. high schools, but is not due to lack of basic training on the part of teachers. Additional analyses of SASS data are needed to examine the recruitment and hiring practices and conditions of schools with high versus low rates of out-of-field teaching. (HTH)

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ISSUE BRIEF

Are High School Teachers Teaching Core Subjects Without College Majors or Minors in Those Subjects?

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One of the most important characteristics of a qualified high school teacher is college training in the subject in which he or she teaches. This may be especially true for the core academic subjects in high school (Shavelson, McDonnell, and Oakes 1989; Darling-Hammond and Hudson 1990). For this reason, it is important to know something of the extent to which high school teachers are assigned to teach subjects out of their areas of specialization.

Out-of-field teaching can be empirically measured in a number of ways (e.g., detailed analyses of out-of-field measures are presented in Bobbitt and McMillen 1995). Data now available from the 1987–88, 1990–91, and 1993–94 Schools and Staffing Surveys (SASS), conducted by the National Center for Education Statistics (NCES), can be used to estimate the percentages of teachers teaching out of field. This brief, which is adapted from a report by Richard Ingersoll (1995), is based on 1990–91 SASS data. *For this brief, an out-of-field teacher is defined as a teacher teaching one or more mathematics, science, social studies, or English classes without at least an undergraduate or graduate-level major or minor in the particular subject.* The 1990–91 SASS collected information on teachers' undergraduate and graduate degrees, as well as a complete listing of their school teaching assignments. With these data, it is possible to examine the percentages of out-of-field teachers in core subjects and to determine whether differences exist among different types of schools in the extent to which teachers are assigned to teach subjects that do not fit their subject-area specialties.

In 1990–91, relatively large percentages of high school teachers taught at least one core course out of field.

Mathematics was the subject with the highest percentage of out-of-field teachers, and English was second to mathematics in the reported incidence of out-of-field teaching (table 1). Of all teachers who taught at least one high school mathematics class, for example, almost one-third did not have a college major or minor in mathematics or mathematics education. Among those teachers who taught at least one high school class in English or in an English-related subject (e.g., literature, journalism), almost one-quarter did not have a college major or minor in English. In contrast, of those who taught at least one high school science or social studies class, about one-fifth did not have college majors or minors in these subjects.

Table 1. Percentages of high school teachers who taught one or more classes in a subject without at least an undergraduate or graduate minor in that subject: 1990–91

	Math	Science	Social Studies	English
Total	32.1	18.7	18.9	23.2
Public	30.5	16.9	16.9	21.9
Size				
<300	40.3	24.4	23.8	26.9
300–599	33.8	20.3	19.1	27.3
≥600	28.0	14.2	15.3	20.0
Free/reduced-price lunch recipients				
<20%	27.7	14.0	15.7	19.2
20–49%	31.8	20.3	19.2	24.5
≥50%	40.0	20.2	18.0	30.7
Private	41.0	28.6	30.3	32.0
Size				
<300	59.0	43.5	43.6	47.1
300–599	31.0	14.9	21.7	19.9
≥600	21.9	7.7	16.4	19.6
Orientation				
Catholic	33.1	20.1	21.3	22.0
Other religious	51.7	41.9	45.8	39.5
Nonsectarian	36.6	22.6	23.0	32.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1990–91 Schools and Staffing Survey (School and Teacher Questionnaires).

In 1990–91, greater percentages of teachers in private high schools taught out of field in mathematics, science, social studies, and English than did their counterparts in public high schools.

Based on the numbers of teachers who reported that they taught at least one class in mathematics, science, social studies, or English, larger percentages of teachers in private high schools taught in these subjects without at least a college

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minor than was true in public high schools. In mathematics, for example, 41 percent of the private high school teachers who taught the subject had not earned either a college major or minor in the subject, as compared to about 31 percent of public high school teachers. There was, however, diversity within the private sector. Levels of out-of-field teaching in both Catholic and nonsectarian private schools were close to those in the average public school. On the other hand, teachers in other religious schools had distinctly higher out-of-field teaching levels than did public school teachers in the four core academic subjects.

In 1990–91, public and private high schools with the lowest enrollments had greater percentages of teachers teaching out of field than did the largest schools.

Small public and private high schools (i.e., with fewer than 300 students) had higher levels of out-of-field teaching in mathematics, science, social studies, and English than did their largest counterparts (i.e., schools enrolling 600 or more students). Looking again at mathematics as an example, the percentages of mathematics teachers in small public and private high schools teaching out of field were about 40 percent and 59 percent, respectively, compared to 28 percent and almost 22 percent, respectively, in the largest public and private schools.

In 1990–91, public high schools with 50 percent or more students receiving free or reduced-price lunches had higher levels of out-of-field teaching in selected subjects than did schools with less than 20 percent of these students.

Public high schools with 50 percent or more students receiving free or reduced-price lunches (i.e., "high-poverty schools") had higher levels of out-of-field teaching in mathematics, science, and English than did public high schools with fewer than 20 percent of these students (i.e., "low-poverty schools"). In mathematics, for example, 40 percent of public high school teachers in high-poverty schools taught out of field, compared to nearly 28 percent of mathematics teachers in low-poverty schools. In social studies, the levels of out-of-field teaching in these two types of schools were about the same. (Estimates of the percentages of students receiving free or reduced-price lunches are approximations of the total numbers of students eligible for these lunches, as some eligible students may choose not to accept these lunches.)

Discussion

These SASS data clearly indicate that out-of-field teaching in core subjects is common in both public and private high schools in the United States. But, out-of-field teaching is not due to a lack of basic training on the part of teachers. In fact, SASS data indicate that almost all high school teachers in 1990–91 had bachelors' degrees and half had graduate degrees (Choy et al. 1993). Are schools finding it difficult to recruit teachers in core subjects? Have schools adapted their organizational structures (e.g., schedules) to make best use of their core subject teachers? What percentage of high school students are being taught core subjects by out-of-field teachers? To examine these questions, additional analyses of SASS data are needed to examine the recruitment and hiring practices and conditions of schools with high versus low rates of out-of-field teaching. Similarly, profiles need to be developed of the out-of-field teachers—e.g., their experience in the profession, the degrees they hold, the types of students they currently teach, their attitudes about school-related issues, and their education-related goals for students. Issues to be explored with other data bases include the effects on student learning and the extent to which levels of out-of-field teaching differ for schools within the same districts.

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Issue Briefs present information on education topics of current interest. All estimates shown are based on samples and are subject to sampling variability. All differences are statistically significant at the .05 level. In the design, conduct, and data processing of NCES surveys, efforts are made to minimize the effects of nonsampling errors, such as item nonresponse, measurement error, data processing error, or other systematic error. For additional details on SASS data collection methods and definitions, see the following U.S. Department of Education publications: *1990–91 Schools and Staffing Survey: Sample Design and Estimation* (NCES Report No. 93–449) and *Quality Profile for SASS: Aspects of the Quality of Data in the Schools and Staffing Surveys (SASS)* (NCES Report No. 94–340).

This **Issue Brief** was prepared by Richard Ingersoll, American Institutes for Research. To obtain standard errors or definitions of terms for this **Issue Brief**, or to obtain additional information about the Schools and Staffing Survey, contact Charles H. Hammer (202) 219–1330. To order additional copies of this **Issue Brief** or other NCES publications, call 1–800–424–1616.

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